

# Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 EF 3.1 for:

## Electrofusion Pipe Fittings from **PLASSON®**



**Programme** - The International EPD System, [www.environdec.com](http://www.environdec.com)

**Programme operator** - EPD International AB

**EPD registration number** - EPD-IES-0028360:001

**Version date:** 2026-01-27

**Validity date:** 2031-01-26

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An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see [www.environdec.com](http://www.environdec.com). This EPD covers multiple products, based on a representative product, listed in page 5 of this document

# General Information

## Programme Information

|            |                                                               |
|------------|---------------------------------------------------------------|
| Programme: | The International EPD System                                  |
| Address:   | EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden |
| Website:   | <a href="http://www.environdec.com">www.environdec.com</a>    |
| E-mail:    | <a href="mailto:info@environdec.com">info@environdec.com</a>  |

### Accountabilities for PCR, LCA and independent, third-party verification:

#### Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): Construction products 2019:14 version 2.0.1  
UN CPC code 3632 – Tubes, pipes and hoses, and fittings therefor, of plastics

PCR review was conducted by: The Technical Committee of the International EPD System. No chair appointed

#### Life Cycle Assessment (LCA)



LCA accountability: Eva Elbaz & Eli Shmushko, Green Target  
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#### Third-Party Verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

☐ EPD verification by individual verifier



Third-party verifier: Samara Costa, PIEP

Approved by: The International EPD System

Procedure for follow-up of data during EPD validity involves third party verifier:

☒ Yes ☐ No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

## Company Information

**Owner of the EPD:** PLASSON Ltd.

**Contact:** Lior Aram

**Description of the organisation:** Founded in 1964 at Kibbutz Ma'agan Michael, Israel, PLASSON has grown from a local initiative into a global leader in piping systems. What began as a small kibbutz-based factory has evolved into an international group operating in over 100 countries, providing advanced solutions for the water, gas, mining, and infrastructure sectors. PLASSON is a global leader in the development, manufacturing, and marketing of high-quality technical products, including Flow Solutions (fittings and valves), livestock equipment, and other specialized solutions. We are experts in Electrofusion (EF) fittings - combining engineering excellence, installation efficiency, and outstanding durability – all designed and manufactured to leading international standards.

Our operations meet ISO 9001 (Quality Management), ISO 14001 (Environmental Management), ISO 45001 (Occupational Health & Safety), and ISO 50001 (Energy Management), reflecting our commitment to excellence, sustainability, and employee well-being. Our products comply to globally recognized quality and performance standards, ensuring reliability in diverse markets worldwide.

Sustainability is the heart of what we do - from responsible raw material sourcing and energy-efficient manufacturing to waste reduction and resource reuse. We aim to minimize the carbon footprint of our products throughout their life cycle – from production to installation and use.

PLASSON's main production site in Ma'agan Michael, combines decades of expertise, advanced technologies, and strict quality control to deliver products trusted by professionals across the globe.

This Environmental Product Declaration reflects that commitment, providing customers and partners full transparency on the environmental impact of our EF product line. For PLASSON, it is more than a report – it is a statement of how we choose to operate: responsibly, transparently, and in partnership with the world around us.

## Product Information

**Product name:** ElectroFusion pipe fittings

**Product identification:** 490103/ 490104/ 490404/ 490504/ 491104/ 491204/ 4947C4/ 4947D4.

**Product description:** Coupler, 90 Tee, 90 Elbow, Reducing coupler, End cap and adjustable Elbow.

**UN CPC code:** 3632 – Tubes, pipes and hoses, and fittings therefor, of plastics

**Geographical scope:** The study represents the manufacturing of electrofusion pipe fittings in PLASSON's manufacturing site in Maagan Michael, Israel.

**Technical specifications:** PLASSON electrofusion fittings are pressure-rated components designed to provide reliable fusion jointing for polyethylene (PE) pipelines. They are produced from PE100 or PE100-RC materials in accordance with the relevant EN and ISO international standards and are compatible with standard SDR-rated PE piping systems.

Each fitting contains embedded resistance wires that generate controlled heat during the welding cycle, creating a homogeneous bond between the fitting and the pipe. This produces a long-lasting, leak-free joint with high tensile strength, excellent pressure resistance, and strong protection against corrosion, ground movement, and chemical exposure.

### Classification and Performance

The fittings comply with international standards for water supply, drains, and sewers under pressure (EN 12201-3, ISO 4427-3) and for the supply of gaseous fuels (EN 1555-3, ISO 4437-3), as well as various national standards. They are suitable for PN-rated water networks and MOP-rated gas systems.

The products support typical installation environments—buried, above-ground, and trenchless—and are designed for a minimum service life of 50 years.

## Intended Applications

PLASSON electrofusion fittings are used in a wide variety of applications such as:

- Potable water distribution and transmission networks
- Natural gas distribution systems
- Industrial piping systems
- Geothermal installations
- Aquaculture and fish farming
- Mining and slurry transport lines
- Wastewater and sewer networks
- Agricultural and irrigation systems
- Rehabilitation and repair of existing PE pipelines.

## LCA Information

**Declared unit:** 1 kg of product

This is a group EPD, covering 7 product series as specified in the table below.

All product series included undergo the same manufacturing process and consist of similar main components. The LCA study was conducted per 1 kg of pipe fitting, using specific data relating to a 560mm coupler serial No. 490103560. The pipe fittings series included vary from one another by size and proportions between its components remains, thus, linearity in materiality can be ensured.

The EN 15804 reference package is based on EF3.1.

### List of variants covered in this study:

| Product model | Product description          | Size [mm] |
|---------------|------------------------------|-----------|
| 490103        | Coupler                      | 400-1000  |
| 490104        | Coupler                      | 16-355    |
| 490404        | 90 Tee                       | 20-250    |
| 490504        | 90 Elbow                     | 20-250    |
| 491104        | Reducing coupler             | 16-180    |
| 491204        | End cap                      | 20-315    |
| 4947C4        | Adjustable elbow (two sided) | 90-250    |
| 4947D4        | Adjustable elbow (one sided) | 90-250    |

**Reference service life:** NA

**Time representativeness:** The specific data for the LCA study is based on 2023 production data from PLASSON's manufacturing site in Maagan Michael.

**Database(s) and LCA software used:** Open LCA v2.2.0 & Ecoinvent v3.10 EN15804 add-on.

**Description of system boundaries:** Cradle to gate, with modules C1-C4 and module D (A1-A3, A5, C1-C4 & D).

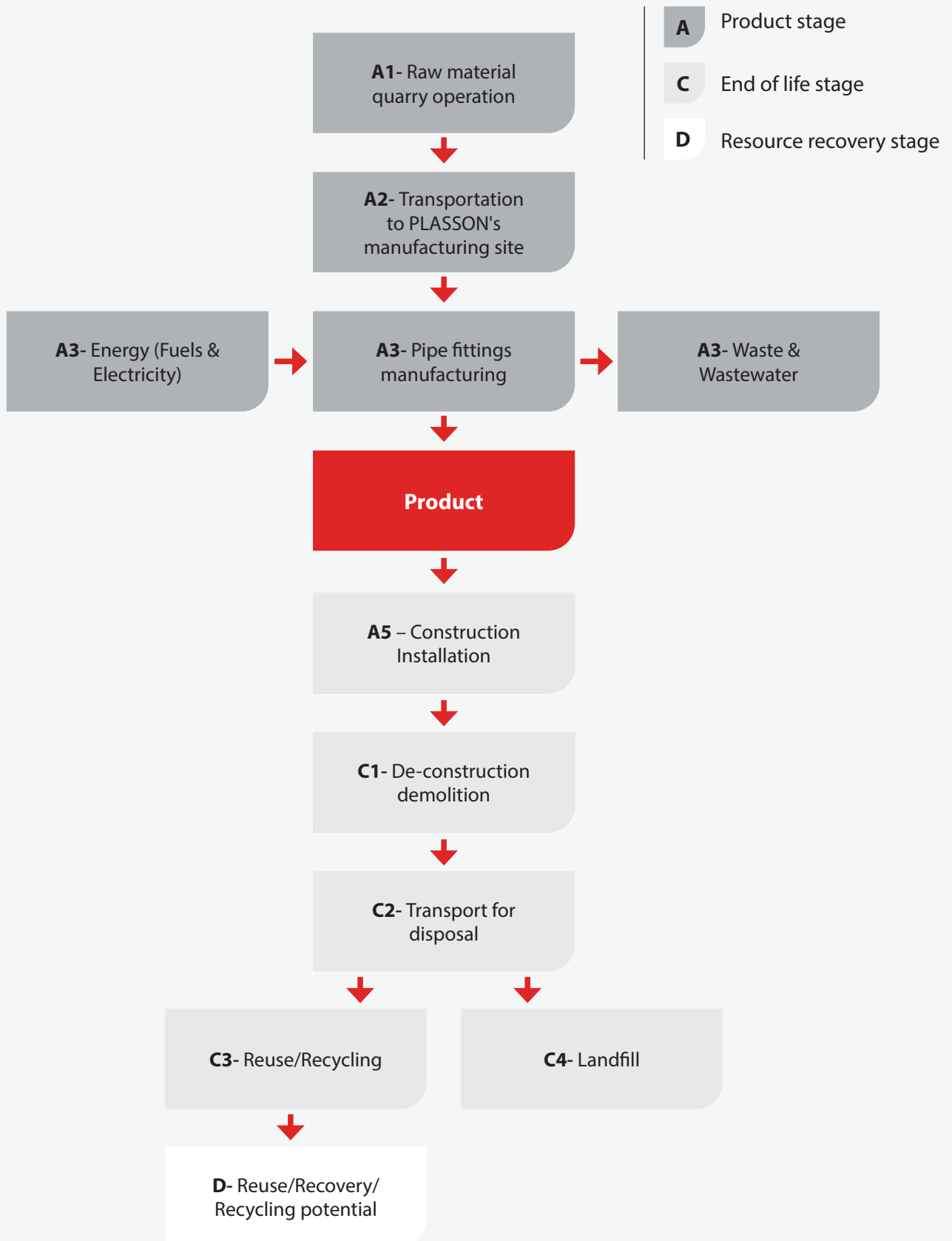
**Cut-off rules:** All inputs & outputs were considered in this study. The study does not include the manufacturing processes and maintenance of capital goods or spare parts as their lifespan is more than 3 years.

The environmental impacts of general organizational operations and employees' activities (offices, travels etc.) were not included in this study as well, as they are relevant for PLASSON's entire manufacturing sites and headquarters and not only for the production lines.

PLASSON's power supply is from the Israeli grid. The grid in Israel is a single grid and the production mix data is not officially published. The power mix was modelled according to the data available in Ecoinvent V3.10 (Average electricity in Israel: 0.769kgCO<sub>2</sub>eq/kWh).

**Allocations:** According to EN 15804:2012+A2:2019, allocations in this LCA were avoided where possible. Energy and waste data have been allocated on physical criteria of mass as this data in the process level was not available.

## System Diagram



Stages A4 and Module B were excluded from this LCA study.

**Modules declared, geographical scope, share of specific data  
(in GWP-GHG indicator) and data variation:**

|                      | Product Stage       |           |               | Construction Process Stage |                           | Use Stage |             |        |             |               |                        |                       | End of Life Stage          |           |                  |          | Resource Recovery Stage            |
|----------------------|---------------------|-----------|---------------|----------------------------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
|                      | Raw Material Supply | Transport | Manufacturing | Transport                  | Construction Installation | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational Energy Use | Operational Water Use | De-Construction Demolition | Transport | Waste Processing | Disposal | Reuse-Recovery-Recycling-Potential |
| Module               | A1                  | A2        | A3            | A4                         | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                  |
| Modules Declared     | X                   | X         | X             | ND                         | X                         | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | X                          | X         | X                | X        | X                                  |
| Geography            | IL                  | IL        | IL            | ND                         | Glo                       | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | Glo                        | Glo       | Glo              | Glo      | Glo                                |
| Specific Data Used   | 2.66%               |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – Products | 0%                  |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |
| Variation – Sites    | 0%                  |           |               |                            |                           | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -        | -                                  |

**Specific data:**

| Product components                                              | Source type           | Source         | Year | Data type                     | Percentage of primary GWP-GHG data results for A1-A3 |
|-----------------------------------------------------------------|-----------------------|----------------|------|-------------------------------|------------------------------------------------------|
| Production of raw materials                                     | Database              | Ecoinvent 3.10 | 2023 | Representative secondary data | 00.00%                                               |
| Transportation of raw materials to the production site          | Information collected | SAP            | 2023 | Primary data                  | 2.66%                                                |
| Manufacture of the product                                      | Database              | Ecoinvent 3.10 | 2023 | Representative secondary data | 00.00%                                               |
| Total percentage of primary data from GWP-GHG results for A1-A3 |                       |                |      |                               | 2.66%                                                |

*The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.*

## Data quality assessment

Data quality level was assessed separately for each declared module, using the criteria of the Product Environmental Footprint Category Rules (EN 15804:2012+A2:2019/AC:2021 – Annex E).

Assessment was done according to the following criteria:

- "Good" data corresponds to "Average data from larger area in which the area under study is included".
- "Very good" data corresponds to "Data from area under study".

Geographical representativeness is rated between "good" to "very good" for all declared modules.

Technical representativeness is rated between "good" to "very good" for all declared modules.

Temporal representativeness is rated "very good" for all modules ("Less than 3 years").

## Product Stage (A1-A3):

### Module A1 – Raw Material Supply

The product consists mainly of polymer components and a few metal components. This module includes the raw materials and packaging materials extraction and their manufacturing operations.

### Module A2 – Transport (Materials)

This module includes the transport of all raw materials and packaging materials. Sourcing of raw materials from different countries, primarily from Israel and Europe. Transport is calculated according to the origin of the sourced materials as both overseas and land transportation are accounted for.

### Module A3 – Manufacturing

Polymer's extrusion and cuttings, final assembly and hydraulic tests are done in PLASSON's manufacturing site. Energy flow represents the electricity consumption.

### Module A5 – Construction installation

Packaging waste treatment was calculated according to average common waste treatment methods per each material.

## End of Life stage (C1-C4):

### Module C1 - De-construction demolition

De-construction of the pipe fitting is done using manpower alone. Thus, it is assumed that energy used for the de-construction is negligible and the environmental impacts of this module as well.

### Module C2 - Transport

Estimated average distance from de-construction site to disposal facility is assumed to be a 100 km by truck.

### Module C3 - Waste processing

Since metal recycling is beneficial for manufacturers, it is common practice that metal products are sent to recycling at the end of their life. Thus, 90 % of the metal content of Plasson's products (which includes brass, stainless steel and copper = 0.0144 kg out of 1 kg ≈ 1.4%) is modeled as it is sent to recycling.

### Module C4 - Disposal

The majority of the product, made of polymer (which include polypropylene, polyethylene, Polyamide 6 and PVC = 0.984kg out of 1kg ≈ 98.4%) is assumed to be sent to landfill along with the remaining 10% of metals (which includes brass, stainless steel and copper = 0.0016 kg out of 1 kg ≈ 0.2%).

## Benefits and loads beyond the system boundary (D):

### Module D - Benefits and loads beyond the system boundary

Benefits beyond the system boundaries are tied to the recycling of metals and calculated according to the Annex D of 15804+A2.

## Content Information

| Product components  | Weight, kg | Post-consumer material, weight-% | Biogenic material, weight-% and kg C/kg |
|---------------------|------------|----------------------------------|-----------------------------------------|
| Polypropylene       | 8.50E-05   | 0                                | 0                                       |
| Paper               | 4.00E-06   | 0                                | 0                                       |
| Brass               | 8.40E-05   | 0                                | 0                                       |
| Polyethylene        | 9.78E-01   | 0                                | 0                                       |
| Polyamide 6         | 2.70E-05   | 0                                | 0                                       |
| PVC                 | 5.96E-03   | 0                                | 0                                       |
| Stainless steel     | 1.05E-03   | 0                                | 0                                       |
| Copper              | 1.48E-02   | 0                                | 0                                       |
| TOTAL               | 1.00E+00   | 0                                | 0                                       |
| Packaging materials | Weight, kg | Weight-% (versus the product)    | Weight biogenic carbon, kg C/kg         |
| Cardboard box       | 6.05E-02   | 6.05                             | 3.03E-02                                |
| LDPE stretch        | 8.70E-03   | 0.87                             | 0                                       |
| TOTAL               | 6.92E-02   | 6.92                             | 3.03E-02                                |

- Biogenic carbon containing materials in the product are less than 5% of the products' mass, thus the declaration of biogenic carbon content in the product is omitted.
- In accordance with Annex 2 of the PCR - Biogenic carbon from packaging is balanced out in module A5.
- The product declared in this LCA study does not contain substances from the SVHC list.

## Environmental Information

### Potential environmental impact – mandatory indicators according to EN 15804

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

We discourage the use of the results of modules A1-A3 without considering the results of module C.

| Results per functional or declared unit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |          |          |          |          |           |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|----------|----------|----------|-----------|
| Indicator                               | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A1-A3     | A5       | C1       | C2       | C3       | C4       | D         |
| GWP-fossil                              | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3.07E+00  | 8.50E-02 | 0.00E+00 | 1.92E-02 | 2.59E-04 | 9.18E-02 | -1.74E-03 |
| GWP-biogenic                            | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -3.01E-02 | 5.34E-02 | 0.00E+00 | 5.59E-07 | 1.58E-06 | 9.08E-05 | 2.84E-05  |
| GWP-luluc                               | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.05E-03  | 6.36E-07 | 0.00E+00 | 7.78E-06 | 6.60E-07 | 6.58E-06 | -1.92E-06 |
| GWP-total                               | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3.05E+00  | 1.38E-01 | 0.00E+00 | 1.92E-02 | 2.61E-04 | 9.19E-02 | -1.71E-03 |
| GWP-GHG <sup>1</sup>                    | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3.09E+00  | 1.28E-01 | 0.00E+00 | 1.92E-02 | 2.60E-04 | 9.19E-02 | -1.74E-03 |
| ODP                                     | kg CFC 11 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1.28E-07  | 3.48E-11 | 0.00E+00 | 2.84E-10 | 5.38E-12 | 2.87E-10 | -1.44E-11 |
| AP                                      | mol H <sup>+</sup> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.43E-02  | 4.73E-05 | 0.00E+00 | 4.39E-05 | 1.41E-06 | 8.36E-05 | -4.10E-05 |
| EP-freshwater                           | kg P eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2.38E-03  | 4.54E-07 | 0.00E+00 | 1.52E-06 | 2.26E-08 | 1.25E-06 | -2.81E-05 |
| EP-marine                               | kg N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3.15E-03  | 6.31E-05 | 0.00E+00 | 1.02E-05 | 5.37E-07 | 2.07E-03 | -1.17E-05 |
| EP-terrestrial                          | mol N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3.53E-02  | 2.17E-04 | 0.00E+00 | 1.10E-04 | 5.76E-06 | 3.30E-04 | -1.69E-04 |
| POCP                                    | kg NMVOC eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1.88E-02  | 1.74E-04 | 0.00E+00 | 6.15E-05 | 2.02E-06 | 1.30E-04 | -3.34E-05 |
| ADP-minerals & metals*                  | kg Sb eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6.08E-05  | 5.33E-09 | 0.00E+00 | 6.41E-08 | 6.90E-10 | 2.53E-08 | -5.24E-07 |
| ADP-fossil*                             | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 8.74E+01  | 2.51E-02 | 0.00E+00 | 2.69E-01 | 4.61E-03 | 2.48E-01 | -1.97E-02 |
| WDP*                                    | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 8.14E-01  | 1.62E-03 | 0.00E+00 | 1.22E-03 | 1.81E-05 | 1.23E-03 | -7.13E-04 |
| Acronyms                                | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |           |          |          |          |          |          |           |

**\*Disclaimer:** The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

- <sup>1</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero..

## Use of resources

| Indicator | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A1-A3    | A5        | C1       | C2       | C3       | C4        | D         |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|----------|----------|----------|-----------|-----------|
| PERE      | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3.66E+00 | 4.75E-04  | 0.00E+00 | 3.59E-03 | 5.52E-05 | 3.94E-03  | -7.76E-03 |
| PERM      | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.00E+00 | 0.00E+00  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  | 0.00E+00  |
| PERT      | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 3.66E+00 | 4.75E-04  | 0.00E+00 | 3.59E-03 | 5.52E-05 | 3.94E-03  | -7.76E-03 |
| PENRE     | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 8.04E+01 | 2.28E-02  | 0.00E+00 | 2.44E-01 | 4.19E-03 | 2.25E-01  | -1.89E-02 |
| PENRM     | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7.00E+00 | 2.28E-03  | 0.00E+00 | 2.48E-02 | 4.33E-04 | 2.27E-02  | -8.02E-04 |
| PENRT     | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 8.74E+01 | 2.51E-02  | 0.00E+00 | 2.69E-01 | 4.62E-03 | 2.48E-01  | -1.97E-02 |
| SM        | kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.79E-01 | 3.02E-05  | 0.00E+00 | 2.03E-04 | 4.03E-06 | 2.00E-04  | -8.91E-05 |
| RSF       | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 6.18E-02 | 7.88E-06  | 0.00E+00 | 2.58E-05 | 4.61E-07 | 3.69E-05  | -1.47E-05 |
| NRSF      | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.00E+00 | 0.00E+00  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  | 0.00E+00  |
| FW        | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2.11E-02 | -8.81E-06 | 0.00E+00 | 3.60E-05 | 2.59E-06 | -3.64E-03 | -1.87E-05 |
| Acronyms  | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water |          |           |          |          |          |           |           |

The primary energy use indicators were calculated according to the rules defined in Annex 3 of the PCR for construction products V2.0.1. The option A was used for the calculation, in which the energy used as raw material was declared as an input to the model where it enters the product system and as an equally large output from the product system where it exits the system.

## Waste production and output flows

### Waste production

| Indicator                    | Unit | A1-A3    | A5       | C1       | C2       | C3       | C4       | D         |
|------------------------------|------|----------|----------|----------|----------|----------|----------|-----------|
| Hazardous waste disposed     | kg   | 1.04E-01 | 8.81E-05 | 0.00E+00 | 3.25E-04 | 4.75E-06 | 3.10E-04 | -3.98E-04 |
| Non-hazardous waste disposed | kg   | 2.14E+01 | 1.67E-01 | 0.00E+00 | 1.34E-02 | 1.97E-04 | 4.89E+00 | -8.89E-04 |
| Radioactive waste disposed   | kg   | 5.67E-05 | 8.84E-09 | 0.00E+00 | 5.89E-08 | 8.66E-10 | 6.60E-08 | -2.89E-08 |

## Output flows

| Indicator                     | Unit | A1-A3     | A5       | C1       | C2       | C3       | C4       | D         |
|-------------------------------|------|-----------|----------|----------|----------|----------|----------|-----------|
| Components for re-use         | kg   | 1.28E-07  | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  |
| Material for recycling        | kg   | 1.26E-01  | 2.55E-05 | 0.00E+00 | 1.30E-04 | 4.48E-05 | 1.40E-04 | -3.99E-05 |
| Materials for energy recovery | kg   | 2.378E-05 | 3.54E-09 | 0.00E+00 | 0.00E+00 | 2.07E-10 | 1.66E-08 | -6.57E-09 |
| Exported energy, electricity  | MJ   | 3.32E-02  | 4.39E-06 | 0.00E+00 | 0.00E+00 | 3.23E-05 | 2.52E-05 | -7.18E-06 |
| Exported energy, thermal      | MJ   | 1.79E-02  | 9.46E-06 | 0.00E+00 | 0.00E+00 | 6.48E-06 | 2.84E-05 | -8.78E-06 |

## Additional information

Potential environmental impact for End-of-life scenarios if 100% of the product is recycled or sent to landfill.

| Results per declared unit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |          |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|
| Indicator                 | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | C3       | C4       |
| GWP-fossil                | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.04E-01 | 9.19E-02 |
| GWP-biogenic              | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1.99E-05 | 9.08E-05 |
| GWP-luluc                 | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 7.39E-06 | 6.63E-06 |
| GWP-total                 | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.04E-01 | 9.20E-02 |
| GWP-GHG <sup>2</sup>      | kg CO <sub>2</sub> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.04E-01 | 9.20E-02 |
| ODP                       | kg CFC 11 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3.06E-10 | 2.89E-10 |
| AP                        | mol H <sup>+</sup> eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 7.96E-04 | 8.42E-05 |
| EP-freshwater             | kg P eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1.84E-06 | 1.26E-06 |
| EP-marine                 | kg N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1.85E-03 | 2.07E-03 |
| EP-terrestrial            | mol N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4.48E-03 | 3.37E-04 |
| POCP                      | kg NMVOC eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1.39E-03 | 1.34E-04 |
| ADP-minerals&metals*      | kg Sb eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5.77E-08 | 2.55E-08 |
| ADP-fossil*               | MJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.53E-01 | 2.50E-01 |
| WDP*                      | m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2.16E-02 | 1.23E-03 |
| Acronyms                  | <p>GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&amp;metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption</p> |          |          |

\***Disclaimer:** The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

- C3 results represent the scenario in which 100% of the product is recycled at the end of its life, and in this situation C4 results would be 0 for all of the environmental indicators.
- C4 results represent the scenario in which 100% of the product is sent to landfill at the end of its life, and in this situation C3 results would be 0 for all of the environmental indicators.

<sup>2</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero.

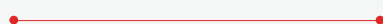
## Abbreviations

| Abbreviation                 | Definition                                                                          |
|------------------------------|-------------------------------------------------------------------------------------|
| <b>General Abbreviations</b> |                                                                                     |
| EN                           | European Norm (Standard)                                                            |
| EF                           | Environmental Footprint                                                             |
| ISO                          | International Organization for Standardization                                      |
| CEN                          | European Committee for Standardization                                              |
| CPC                          | Central product classification                                                      |
| SVHC                         | Substances of Very High Concern                                                     |
| ND                           | Not Declared                                                                        |
| CRU                          | Components for re-use                                                               |
| EEE                          | Exported electrical energy                                                          |
| EET                          | Exported thermal energy                                                             |
| EoL                          | End of life                                                                         |
| EPD                          | Environmental product declaration                                                   |
| EP-freshwater                | Eutrophication potential, fraction of nutrients reaching freshwater end compartment |
| EP-marine                    | Eutrophication potential, fraction of nutrients reaching marine end compartment     |
| EP-terrestrial               | Eutrophication potential, Accumulated Exceedance                                    |
| Eq.                          | Equivalent(s)                                                                       |
| ET-freshwater                | Ecotoxicity, freshwater                                                             |
| EU                           | European union                                                                      |
| FW                           | Use of net fresh water                                                              |
| GWP-biogenic                 | Global Warming Potential biogenic                                                   |
| GWP-fossil                   | Global Warming Potential fossil fuels                                               |
| GWP-GHG                      | Global Warming Potential greenhouse gases                                           |
| GWP-luluc                    | Global Warming Potential land use and land use change                               |
| GWP-total                    | Global Warming Potential total                                                      |
| HWD                          | Hazardous waste disposed                                                            |
| Kg                           | kilogram                                                                            |
| Km                           | kilometer                                                                           |
| LCA                          | Life cycle assessment                                                               |

## References

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- General Program Instructions of the International EPD System. Version 5.0.
  - PCR 2019:14. Construction Products. Version 2.0.1
  - ISO14020:2000 Environmental labels and declarations – General principles
  - ISO14025:2006 Environmental labels and declarations – Type III environmental declarations – principles and procedures
  - ISO14040:2006 Environmental management – Life cycle assessment – principles and framework
  - ISO14044:2006 Environmental management – Life cycle assessment – requirements and guidelines
  - 15804:2012+A2:2019/AC:2021 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products.
  - [https://circulareconomy.europa.eu/platform/sites/default/files/euric\\_metal\\_recycling\\_factsheet.pdf](https://circulareconomy.europa.eu/platform/sites/default/files/euric_metal_recycling_factsheet.pdf)
  - <https://www.mordotcarmel.org>
  - Ecoinvent database V3.10 + EN15804 Add-on.
  - Appendix 1 – Plasson Electrofusion LCA.xlsx
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[www.plasson.com](http://www.plasson.com)